

### POWER DISTRIBUTION SUBSYSTEM HWCI SEA BASED

#### TCS POWER DISTRIBUTION HARDWARE DESIGN SAR **SATCOM OPERATOR STATION OPERATOR STATION** PROCESSOR **Ku-BAND** RS-485 RS-422 LINK **SUBSYSTEM SUBSYSTEM** <sup>†</sup>SUBSYSTEM **SATCOM MANAGE** LOS R ANTENNA **ANTENNA** HAE **ASSEMBL ASSLY ASSLY** LVL 1 I/F 10Base2 lefoonDISPLAY DISPLAY lefoonIMAGERY LAN RS-422 TLMTRY (DN) & C2 (UP) RF TX/RCV CONTROL TO / FROM NRT CPU SATCOM RS-170A OPER RS-422 ANT. CTRL OUT X 6 STA 2 DISPLAY DISPLAY 10Base2 TAC-92 ANTENNA TLMY CONTROLLER **VIDEO REAL** TLMY > **DATALINK SUPPORT INTEGRATED** TIME **KEYBOARD KEYBOARD CONTROL** PIDT **EQPT SUBSYSTEM DATA MODULES** PIDT (RTSS) **TERMINALS** TOUCH (DCM) OID' TOUCH SCREEN (IDT) SCREEN RGB RGB NAV. INPUT MANUAL RS-422 TLMTRY (DN) RS-422 CONTROLS RS-422 & C2 (UP) (P/O RTSS) **NRT NRT** $\leftarrow$ RS-170A RS-170A **CPU CPU** RS-422 RS-170A MANUAL 10Ba RS-422 MC-1 MC-2 INPUT CONTROLS (P/O RTSS) TO / FROM 10Base2 RS-232 IDT CTRL IMAGERY LAN 10BaseT SCSI LOCAL LAN 10BaseT EXTERNAL LAN | BROUTER 10BaseT C4I TCIM TCIM INTERCOM **INTERCOM EXTERNAL** PRINTER **STORAGE**



### POWER DISTRIBUTION HWCI SSDD REQUIREMENT TO EB ALLOCATION

- REQUIREMENTS MATRIX SUMMARY
  - 18 Total SSDD Requirements
  - HWCI Requirements to EB Allocation
    - 24 With EB1
    - 6 With EB5



## POWER DISTRIBUTION OPERATIONAL ENVIRONMENTAL CONSIDERATIONS

- UPS/PDU Installed in Ruggedized rack.
- Compatible with Commercial Red Standards
  - Red: Combat with Severe Temperature and Shock Extremes
- Required to Meet the Following MIL-STDs
  - MIL-S-901D Shock Tests
  - MIL-STD-167-1 Shipboard Vibration
  - MIL-STD-810E Temperature/Humidity

### POWER DISTRIBUTION ELECTROMAGNETIC COMPATIBILITY CONSIDERATIONS

- UPS/PDU Installed in Ruggedized rack.
- Electromagnetic Interference (EMI), Emissions
  - Required to Meet RE101, 102, CE101 and 102 in Accordance with MIL-STD-461 for Surface Ship and Submarines
  - Tested in Accordance with MIL-STD-462
- Electromagnetic Interference (EMI), Susceptibility
  - Required to Meet CS101 and RS101 in Accordance with MIL-STD-461 for Surface Ships and Submarines
  - Tested in Accordance with MIL-STD-462



## POWER DISTRIBUTION HWCI PRELIMINARY DESIGN DESCRIPTION

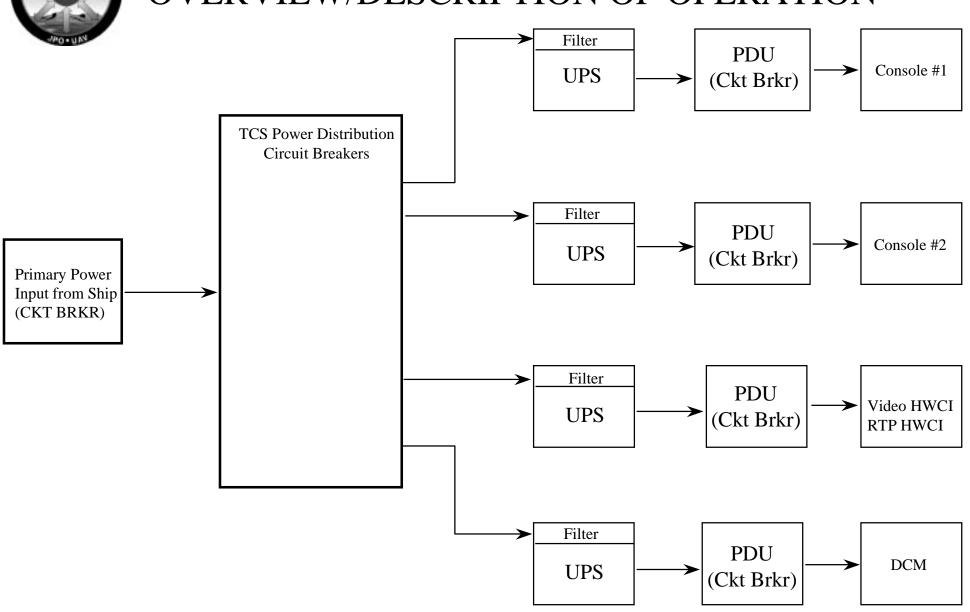
- The Power Distribution Subsystem HWCI consists of the components necessary to condition and provide the appropriate power to the various components of TCS.
- Uninterruptible Power Supply (UPS) HWCI
  - Power Distribution Unit (PDU)
  - Power Distribution HWCI

## POWER DISTRIBUTION HWCI PRELIMINARY DESIGN DESCRIPTION

- Functional Description
  - UPS: The UPS provides on-line conditioned
     115Vac power to TCS components, and upon loss of input power, a battery powered protected power source.
  - PDU: The PDU provides power distribution, management, and communications between UPS and TCS component loads.
  - Power Distribution: The Power Distribution will accept primary power and provide the necessary interfaces to UPS of the various TCS components.



### POWER DISTRIBUTION HWCI OVERVIEW/DESCRIPTION OF OPERATION





### POWER DISTRIBUTION HWCI OVERVIEW/DESCRIPTION



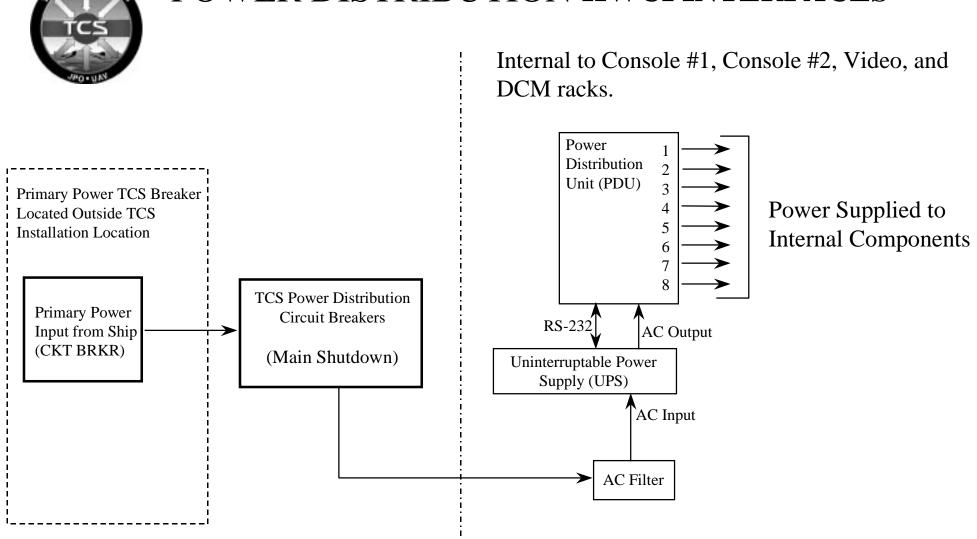


#### UPS

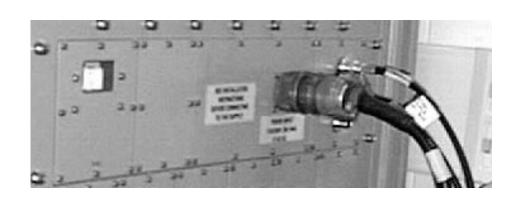
- Power Input of 115/230 VAC at 47-64 Hz
- Provides Conditioned 115 VAC
   with Battery Backup
- Rated at 15min Backup Power at 1500W
- Power Distribution Unit (PDU)
  - Receives Input Power from UPS
  - Provides Eight 115VAC/15AReceptacles
  - Provides +5 and +12 V



### POWER DISTRIBUTION HWCI INTERFACES



## POWER DISTRIBUTION HWCI INTERFACES EXTERNAL I/O

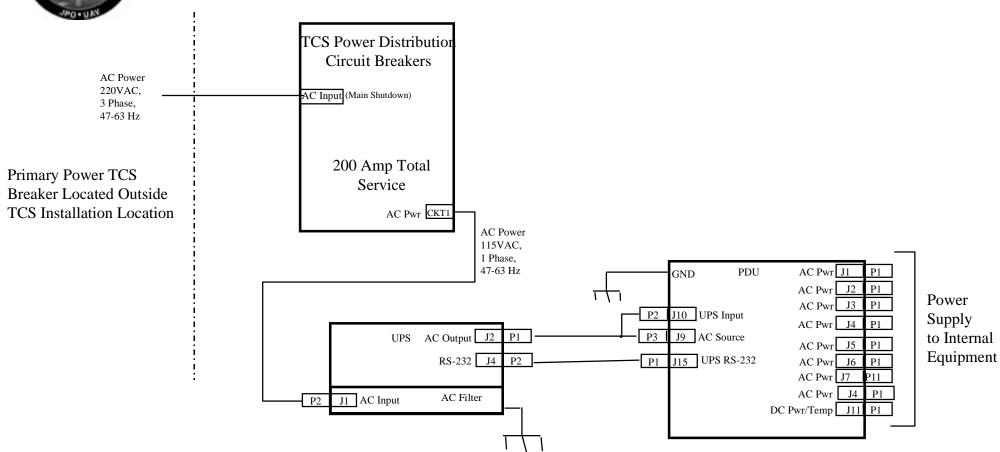


### TAC-4 I/O Panel

- Power Input
  - 120v, 60Hz

### ICS Prouts

### POWER DISTRIBUTION PRELIMINARY DESIGN DRAWINGS



## POWER DISTRIBUTION IDENTIFICATION OF COTS/NDI ITEMS

- COTS Equipment
  - TCS Power Circuit Breaker Panel
  - Interconnection Wiring
- NDI Equipment
  - TAC-4 Contract UPS
  - TAC-4 Contract PDU



## POWER DISTRIBUTION PACKAGING IDENTIFICATION

- Commercially Ruggedized to Environmental Red Standards
  - Red: Shipboard and Submarine combat. Intended for combat situations where survival of mission critical systems is paramount.



### POWER DISTRIBUTION PHYSICAL DATA

#### UPS

- Height = 6 inches
- Width = 19 inches
- Depth = 31.5 inches
- Weight = 185 lbs

### • PDU

- Height = 3.5 inches
- Width = 19 inches
- Depth = 12.6 inches
- Weight = 12 lbs



# POWER DISTRIBUTION POWER REQUIREMENTS

- Uninterruptable Power Supply (UPS)
  - Input Power of 115/230 VAC at 47-64 Hz
  - Provides On-Line Conditioned 115 VAC with Battery Backup
  - Rated at 15min Backup Power at 1500W



## POWER DISTRIBUTION POWER MEASURMENTS

	Measured Values				<b>3</b>	
Qty	ltem	Amp (P)	Amp (O)	V	W(est.)	Notes
1	Video/VME Rack	5.64	3.64	114.30	416.05	
2	TAC-4 Workstation	7.50	7.40	116.90	865.06	Values per Rack
1	(2) DOM Rack	10.10		115.00	1161.50	MAX Values per Spec.
1	PDOM	2.60	2.50	115.00	287.50	Measured
1	ODOM	5.05		115.00	580.75	MAX Values per Spec.

Legend: p = peak amps on startup

o = operating amps

w=Watts



## POWER DISTRIBUTION POWER BACKUP

- Total Power Utilized
  - 416.05 Watts Overall for Video/VME Rack (Measured)
  - 865.06 Watts Overall for each TAC-4 Rack (Measured)
  - 1161.50 Watts Overall for DCM Rack (Per Specification)
- UPS Rated for 15 min @ 1500 Watts
  - Video/VME Rack Backup of 54 min
  - TAC-4 Rack Backup of 26 min for each Rack
  - DCM Rack Backup of 28 min (2 UPS Installed)
  - PDCM Backup of 78 min
  - ODCM Backup of 28 min based on MAX Specification

## POWER DISTRIBUTION IDENTIFICATION OF SUPPORT EQUIPMENT

• NO SPECIALIZED MAINTENANCE EQUIPMENT OR MATERIALS REQUIRED TO MAINTAIN EQUIPMENT